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(12) United States Patent

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(54) MULTI-CONTAINER FLUID TRANSFER AND

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DELIVERY DEVICE

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(Continued)

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(56) References Cited

U.S. PATENT DOCUMENTS

4,576,594 A 3/1986 Greenland 4,722,733 A 2/1988 Howson (Continued)

FOREIGN PATENT DOCUMENTS

JP 11-9656 A 1/1999 JP 2003033424 A 2/2003 (Continued)

OTHER PUBLICATIONS

European Patent Office, European Patent Application No. 11776075.9, Supplemental European Search Report dated Oct. 16, 2014, 6 pages.

(Continued)

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(57) ABSTRACT

A multi-container transfer and deliver device and methods of mixing and transferring, the device configured to allow multiple containers to transfer and mix their respective materials and for receiving of the mixed materials to a fluid delivery device. The transfer device comprises a plurality of flow conduits for fluid flow between the multiple containers and the fluid delivery device. A drug mixing kit and optional packaging comprising a multi-container housing with a plurality of flow conduits and a plurality of sections for receiving containers and a fluid transfer device is described.

11 Claims, 28 Drawing Sheets

